IN THE SPECIFICATION:

Please amend paragraph **[0002]** as follows:

[0002] Field of the Invention: This invention relates generally to multi-chip module systems and their method of fabrication. More specifically, the present invention relates to ~~multi-chip~~ multi-chip module systems and their method of fabrication using known-good-die (KGD) therein.

Please amend paragraph **[0004]** as follows:

[0004] With ever increasing demands for miniaturization and higher operating speeds, multi-chip module systems ~~(MCM's)~~ (MCMs) are increasingly attractive in a variety of electronics. ~~MCM's which~~ MCMs that contain more than one die can help minimize the system operational speed restrictions imposed by long printed circuit board connection traces by combining, for example, the processor, memory, and associated logic into a single package. In addition, ~~MCM's~~ MCMs offer packaging efficiency.

Please amend paragraph **[0005]** as follows:

[0005] Generally, ~~MCM's~~ MCMs may be designed to include more than one type of die within a single package, or may include multiples of the same die, such as the ~~single in line~~ single-in-line memory module (SIMM) or ~~single in line~~ single-in-line package (SIP).

Please amend paragraph **[0006]** as follows:

[0006] It is well known that semiconductor dies have an early failure rate, often referred to in reliability terms as infant mortality. As with all assemblies, this phenomenon is also present in ~~MCM's.~~ MCMs. For example, an MCM composed of ten dice, each die having an individual reliability yield of 95%, would result in a first pass test yield of less than 60%, while an MCM composed of twenty dice, each die having an individual reliability yield of 95%, would produce a first pass test yield of less than 36%. The market's perception of this phenomenon affects the decision to use ~~MCM's~~ MCMs in various applications.

Please amend paragraph **[0007]** as follows:

[0007] Previously, an unacceptable die in an MCM, which has been subjected to ~~burn-in~~ burn-in and testing, has required either the replacement of such a die or the discard of the MCM, both being time consuming and expensive. Additionally, since replacing an unacceptable die on an MCM poses risks to other MCM components during the replacement operation, it may be desirable to discard an MCM with such a die, rather than attempt to rework the MCM, particularly where the reliability of the replacement die is not known.

Please amend paragraph **[0009]** as follows:

[0009] A cost-effective method for producing known reliable ~~MCM's~~ MCMs is desirable for industry acceptance and use of ~~MCM's~~ MCMs in various applications. In an attempt to provide known reliable ~~MCM's~~ MCMs complying with consumer requirements, it is desirable either to fabricate an MCM of KGD or to fabricate an MCM of probe tested dice and subsequently subject the MCM to burn-in and performance testing. However, using only KGD in an MCM may not be cost effective since each KGD has been subjected to performance and burn-in testing, which are costly. In contrast to the use of all KGD in an MCM, when using ~~die~~ dice with well known production and reliability histories, particularly where the die being used is known to have a low infant mortality rate, the use of such minimally tested ~~die~~ dice to produce an MCM may be the most ~~cost effective~~ cost-effective alternative.

Please amend paragraph **[0010]** as follows:

[0010] As previously stated, since typical testing and burn-in procedures are generally labor and time intensive, posing significant risks to the dice of an MCM, in an instance where an MCM is produced from minimally tested ~~die~~ dice and in the event that the MCM contains an unacceptable die, replacement of unacceptable ~~die~~ dice with a KGD is preferable in the rework of the MCM because rework with KGD should not require the MCM to be subjected to further burn-in, but ~~rather,~~ rather only performance testing.

Please amend paragraph **[0011]** as follows:

[0011] An example of a multi-chip module having a plurality of dynamic random access memory devices ~~(DRAM's)~~ (DRAMs) used as memory in a computer is illustrated in United States Patent 4,992,850, issued February 12, 1991, to Corbett et al., assigned to the assignee of the present invention.

Please amend paragraph **[0016]** as follows:

[0016] Therefore, a need exists for the cost-efficient fabrication of ~~MCM's~~ MCMs of known performance and reliability requirements.

Please amend paragraph **[0017]** as follows:

[0017] The present invention relates to known reliable multi-chip module systems and their method of fabrication. The present invention relates to multi-chip module systems and their method of fabrication using known-good-die (KGD) therein. In one embodiment of the present invention, a multi-chip module system is fabricated from probe tested ~~die,~~ dice, burned-in, and if a die requires replacement after burn-in of the multi-chip module system, a known-good-die is used for replacement of the failed die. In another embodiment of the present invention, the multi-chip module system and the method of fabrication thereof includes a module having the capacity to accommodate at least two semiconductor dice, the module accommodating at least one more die than is desired to meet the module's intended function and performance parameters. Accordingly, the multi-chip module of the present invention includes at least one die and at least one vacant position capable of accommodating one or more additional dice where an acceptable die may be located in the module if it is determined that an unacceptable die is present from the testing and/or burn-in of the multi-chip module system.

Please amend paragraph **[0027]** as follows:

[0027] In the event that one or more dice is unacceptable, a known-good-die (KGD) compatible with the unacceptable die is added to the MCM by positioning the KGD into a vacant position on the MCM, which position is configured to accept such a die as the unacceptable die. Likewise, where an MCM contains more than one unacceptable die, an equal number of ~~KGD's~~ KGDs may be added into vacant positions on the MCM, which positions have been configured to accept such dice as the unacceptable dice. It is to be understood, however, that fewer ~~KGD's~~ KGDs may be added than there are unacceptable dice where the combined effect of the KGD added to the MCM produces the same desired result. For example, where a ten megabyte memory MCM having ten individual one megabyte dice is determined to have two unacceptable dice, a single two megabyte die may be added to the MCM for an equivalent overall result of ten megabytes of memory.

Please amend paragraph **[0028]** as follows:

[0028] The method of the present invention is applicable to ~~MCM's which~~ MCMs that contain only one type of die, as well as to ~~MCM's which~~ MCMs that contain more than one type of die. In the situation where an MCM contains only one type of die (e.g., SIMM type or SIP type), one or more vacant positions are provided on the MCM to accommodate an additional die in the event the MCM fails to meet its predetermined performance characteristics. The vacant position or positions are constructed with the necessary connections and traces in the event a KGD is later added to the MCM.

Please amend paragraph **[0032]** as follows:

[0032] Referring ~~to the~~ to FIG. 1 of the drawings, a SIMM type MCM or SIMM 10 in accordance with the present invention is shown. The SIMM 10 has eight dice 12 of the same type mounted on a suitable substrate 11. Although the SIMM 10 requires eight dice 12 to meet its design requirements, a ninth die position 14 is produced on substrate 11 of the SIMM 10 with suitable connections (not shown). The SIMM 10, having eight dice 12 and one vacant

position 14, is subjected to suitable predetermined testing and burn-in procedures to ensure conformance with desired predetermined performance characteristics.

Please amend paragraph **[0034]** as follows:

[0034] It is to be understood that in the event two dice of the SIMM have been found to be unacceptable, a single KGD 16, having twice the memory of each of the individual dice 12, may be installed in the vacant position 14. An MCM having more than two failed dice can likewise be corrected in the same manner. In alternative embodiments, particularly where size and space limitations are not critical, more than one vacant position 14 may be produced on the SIMM 10, whereby the number of unacceptable dice 12′ may be replaced by an equivalent number of ~~KGD's~~ KGDs 16.

Please amend paragraph **[0035]** as follows:

[0035] Referring to FIG. 3, a first MCM 30 having more than one type of die is shown. In one embodiment, two different vacant positions 32 and 34 are produced on the substrate 31 of the first MCM 30, each capable of accommodating different types of dice. Suitable electrical connections are provided to the vacant positions 32 and 34 on the substrate 31 in the event a die is to be subsequently added to either of the vacant positions 32 or 34. The first MCM 30 of FIG. 3 is designed with three different types of dice 40, 42, and 44. In the event that die 40 is unacceptable, an equivalent KGD (not shown) may be added to the vacant position 32. Likewise, in the event that die 42 is unacceptable, an equivalent KGD may be added to the vacant position 34. In this particular example, an equivalent of die 44, if determined to be unacceptable, is generally not possible due perhaps to the relatively large size of the die 44 and the fact that there is only one die 44 on the first MCM 30. However, under certain circumstances, the first MCM 30, having an unacceptable die 44, may be corrected by adding a combination of ~~KGD's~~ KGDs equivalent to dice 40 and 42 in vacant positions 32 and 34, respectively. An alternative vacant position (not shown) may be provided to accommodate a KGD equivalent of die 44.

Additionally, the vacant positions 32 and 34 may be located on opposite sides of the substrate 31 of the MCM 30, if desired.